



Pozzolanic portland cement



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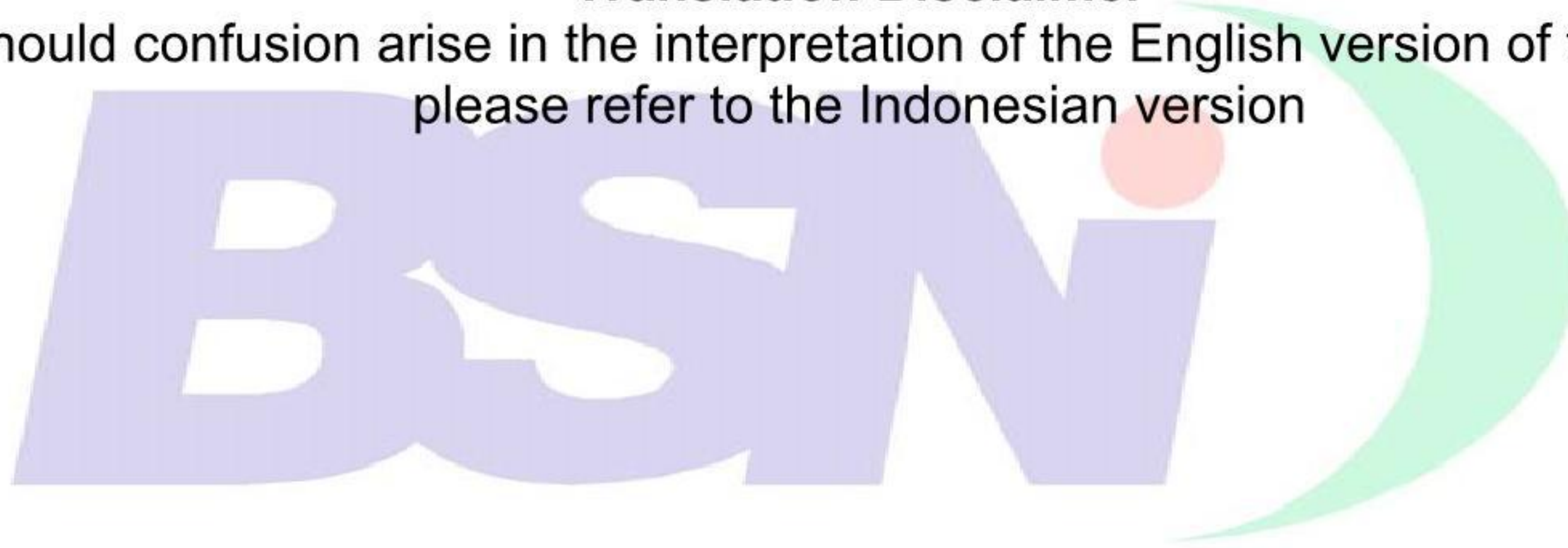
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Should confusion arise in the interpretation of the English version of this SNI,
please refer to the Indonesian version





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Foreword

Indonesian National Standard (SNI) *Pozzolanic portland cement* revises SNI 15-0302-1999. This standard is revised because there are some changes on its reference standards in order to avoid some mistakes on application by consumers and establish suited standards for producers.

The standard has a reference on the newest ASTM C 595-03, *Standard specification for blended hydraulic cement*, and other cement standards.

Pozzolanic portland cement standard is proposed and formulated by Technical Committee 33 S, Inorganic Chemistry. The standard is consensus results held in Jakarta on 8 December 2003 and attended by representatives of producers, consumers, associations, testing bodies and governmental institutions.

Pozzolanic portland cement

1 Scopes

This standard encompasses scopes, normative references, terms and definitions, groups and utilizing, quality requirements, sampling methods, testing methods, tested passing requirements, packaging, marking requirements, storage and transportation of pozzolanic portland cement.

2 Normative references

SNI 15-2049- 2004, *Portland cement*

3 Terms and definitions

3.1

pozzolanic portland cement

hydrolyzed cement had a homogenate composition between portland cement and fine pozzolan, produced by grinding clinker of portland and pozzolanic cement together, or mixing smoothly portland cement and pozzolanic powder, or combination of grinding and mixing, which pozzolan content is 6% to 40% of pozzolanic portland cement mass

3.2

pozzolan

the material had a silica composition or its compounds and alumina, not have binding characteristics like cement, the fine compounds will react chemically by presence of water and calcium hydroxide at room temperatures to form compound having a characteristic like cement

4 Groups and utilizing

4.1 The group of IP-U is pozzolanic portland cement used for all purposes of concrete mixture making.

4.2 The group of IP-K is pozzolanic portland cement used for all purposes of concrete mixture making, all purposes of making of concrete mixtures, medium sulphate resistant and hydrate heat cement.

4.3 The group of P-U is pozzolanic portland cement used for concrete making which is not required for high initial strength.

4.4 The group of P-K is pozzolanic portland cement used for concrete making which is not required for high initial strength, and for medium sulphate resistant and low hydrate heat cement.

5 Quality requirements

5.1 Chemical and physical requirements of pozzolanic portland cement IP-U and IP-K group must meet the requirements:

Table 1 Chemical requirements (IP-U and IP-K group)

No	Group of testing	Units	Requirements	
			IP - U	IP - K
1	MgO	%	max. 6,00	max. 6,00
2	SO ₃	%	max. 4,00	max. 4,00
3.	Glowing loss	%	max. 5,00	max. 5,00

Table 2 Physical requirements (IP-U and IP-K group)

No	Group of testing	Units	Requirements	
			IP-U	IP-K
1	Refinement by Blaine tools	m ² /kg	min 280	min 280
2.	Binding time by Vicat needles			
	- initial binding	minutes	min. 45	min 45
	- end binding	hours	max. 7	max. 7
3.	Durability by autoclaves			
	- expansion	%	max. 0,80	max. 0,80
	- shrinkage	%	max. 0,20	max. 0,20
4.	Pressure strength			
	- age 3 days	kg/cm ²	min. 125	min. 110
	- age 7 days	kg/cm ²	min. 200	min. 165
	- age 28 days	kg/cm ²	min. 250	min. 205
5.	Hydrate heat			
	- age 7 days	kal/g	-	max. 70
	- age 28 days	kal/g	-	max. 80
6.	Air content of mortar	%. volume	max. 12	max. 12

5.2 Chemical and physical requirements of pozzolanic portland cement P-U and P-K group must meet the requirements:

:

Table 3 Chemical requirements (P-U and P-K group)

No	Group of testing	Units	Requirements	
			P - U	P - K
1	MgO	%	max. 6,00	max. 6,00
2	SO ₃	%	max. 4,00	max. 4,00
3.	Glowing loss	%	max. 5,00	max. 5,00

Table 2 Physical requirements (P-U and P-K group)

No	Group of testing	Units	Requirements	
			IP-U	IP-K
1	Refinement by Blaine tools	m ² /kg	min 280	min 280
2.	Binding time by Vicat needles			
	- initial binding	minutes	min. 45	min 45
	- end binding	hours	max. 7	max. 7
3.	Durability by autoclaves			
	- expansion	%	max. 0,80	max. 0,80
	- shrinkage	%	max. 0,20	max. 0,20
4.	Pressure strength			
	- age 3 days	kg/cm ²	-	-
	- age 7 days	kg/cm ²	min. 115	min. 90
	- age 28 days	kg/cm ²	min. 215	min. 175
5.	Hydrate heat			

	- age 7 days	kal/g	-	max. 60
	- age 28 days	kal/g	-	max. 70
6.	Air content of mortar	%. volume	max. 12	max. 22

6 Sampling methods

Sampling methods of pozzolanic portland cement are based on SNI 15-2049-2004, *Portland cement*.

7 Testing methods

7.1 Preparing of testing samples

Testing samples are prepared regarding to SNI 15-2049- 2004, *Portland cement*.

7.2 Chemical testing

7.2.1 Testing of magnesium oxide, sulphur trioxide and glowing loss are based on SNI 15-2049- 2004, *Portland cement*.

7.3 Physical testing

7.3.1 Refinement testing by Blaine tools or turbidimeters, binding by Vicat needles, shape durability by autoclaves, pressure strength, hydrate heat and air content of mortar are based on SNI 15-2049-2004, *Portland cement*.

8 Tested passing requirements

Pozzolanic portland cement is not passed the testing if:

- The cement is failed to meet one of the quality requirements included on clausul 5.
- The cement is failed to meet one of the quality requirements included on clausul 5 after it is retesting done.

- c) The lack of weight more than 2% of weight included on, both in every package and average weight of every dispatch represented by weighing 50 packages taken randomly.

NOTES Retesting can be done on cement residue in storage of silo which will be dispatched for more than 6 month period.

9 Packaging

Pozzolanic portland cement can be traded in both bulk and packages. If there are not other requirements, cement is packaged in sacks having 40 nett weight in every sack. The containers for bulk cement must be water resistance made so that the inner of it is easy to be checked. The containers must be completed by ducts to get out cement.

10 Marking requirements

Packages are included on names at least:

- a) written " Pozzolanic portland cement".
- b) Codes and groups.
- c) Merk/trade marks.
- d) Names of companies.
- e) Nett weight.

The marking of bulk pozzolanic portland cement is included on dispatch documents.

11 Storages and transportation

- a) When cement is stored and transported must be kept so that it is easy to be inspected and identified.

- b) Bulk cement is stored in building/weather resistance storages so that it is protected from humidity and avoided from cement agglomeration in storages and transportation.
- c) Both storages and transportation of cement in sacks are done so that they are avoided from weather influences.



Bibliography

ASTM C 595-03, *Standard specification for blended hydraulic cement.*







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